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1	BRS	L1	81874	magnetic adj reasonance or MR or computer adj tomography or CT or ultrasonic) same(ccd or sens\$4 or detect\$4 or scanner	USPAT; EPO; JPO; USOCR	2003/08/19 09:05
2	BRS	L2	16459	1 same(transform\$5 or conver\$5)	USPAT; EPO; JPO; USOCR	2003/08/19 09:05
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4	BRS	L4	5	3 and @ad<19990318	USPAT; EPO; JPO; USOCR	2003/08/19 09:27
5	BRS	L 5	5	2 same(coordinate near3 transform\$5)same transmitter same receiver	USPAT; EPO; JPO; USOCR	2003/08/19 09:27
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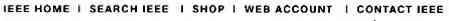
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On page(s): 1240-1243 vol.2

Number of Pages: 5 vol. 3828

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INSPEC Accession Number: 6748332

A method and system for correcting a preprogrammed robot end effector path t reduce the kinematic error are developed. The approach used in the method is t mount 3D ultrasound position sensor on the robot end effector and compute 3D Cartesian position of this sensor using 1D range measurements between the senders and an array of ultrasound receivers at fixed, predetermined positions. The method and system allow speedy correction of a robot path with economica usage of computer resources. The method includes steps of sensing and measur path offsets between the idealized end effector location and the actual location the manipulator end effector at a plurality of waypoints. Then, after appropriate calculations, the method includes the steps of correcting the coordinates of waypoints within the preprogrammed path, transforming the preprogrammed p coordinates into machine control coordinates, and providing a controller for the robot manipulator with such machine control coordinates. A 3D ultrasound posit sensor used in the method provides low-cost, high precision measurements of t Cartesian position of a robot end effector within the robot workspace

Index Terms:

computational complexity manipulator kinematics position control position measuremen ultrasonic transducer arrays 1D range measurements 3D Cartesian position 3D ultrasot position sensor Cartesian position US receiver array kinematic error machine control coordinates manipulator end effector location path offsets robot end effector path correction robot workspace

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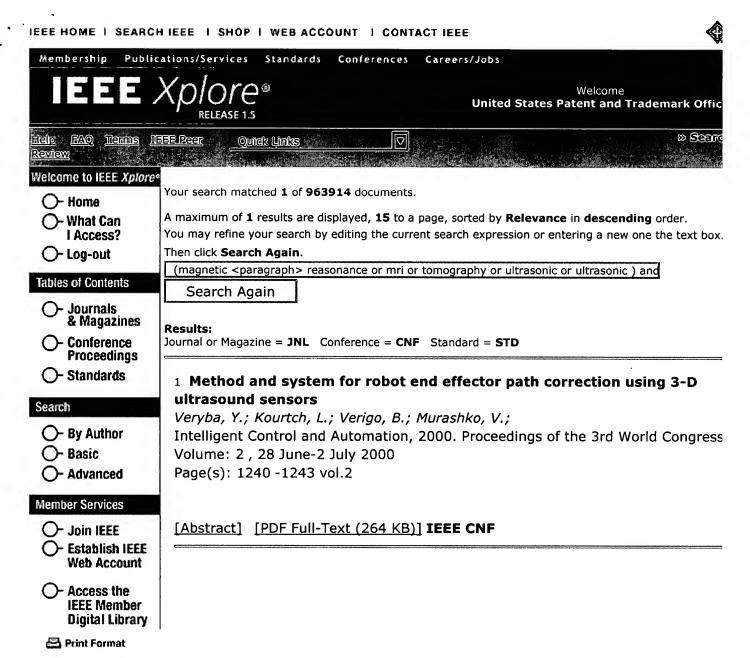
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